

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of

Advanced Television Systems
and Their Impact Upon the
Existing Television Broadcast
Service

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MM Docket No. 87-268

COMMENTS OF THE COALITION OF FILM MAKERS

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SUMMARY

The Coalition of Film Makers (the "Coalition") has a vital interest in the adoption of standards for digital television ("DTV"). The Coalition is deeply concerned, however, that two elements of the video transmission standard proposed by the Advisory Committee on Advanced Television Service ("ACATS") — the aspect ratio and inclusion of interlace scanning techniques— would prevent the public from experiencing films the way that they were intended to be seen by the creators of those films, limit future technological innovation, impose substantial costs on consumers, and delay migration to DTV.

By making only modest changes to the ACATS standard, however, the Commission could rectify decades-old engineering decisions that have made television exhibition of motion pictures a technological bottleneck precluding the public from viewing films as they view them in the theater. Correcting the flaws in the ACATS standard also could assure a future of creative abundance and technical innovation in the motion picture arts and sciences.

While a number of parties maintain that the Commission should decline to adopt any DTV standard, the Coalition believes that such an approach would result in the establishment of a *de facto* standard by foreign manufacturers prepared to capture the U.S. market with hardware based on obsolete technologies that is off the shelf or already in the production pipeline.

Accordingly, the Coalition urges the Commission to adopt a flexible baseline video transmission standard with 480 active video vertical lines per second, a progressive scan format, a requirement that broadcasters transmit all films in their original aspect ratios, and picture refresh rates of 24, 36, or 72 Hz. If the Commission chooses to adopt DTV receiver standards, the Coalition urges that the standards include a 2:1 aspect ratio. Adoption of this base line standard will remedy the flaws

in the proposed ACATS standard while ensuring the realization of the benefits advanced by adoption of an appropriate standard. The promise of this proceeding is great. Adoption of the Coalition's proposed base line standard will ensure that such promise is fulfilled.

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COMMENTS OF THE COALITION OF FILM MAKERS

The Coalition of Film Makers (the "Coalition"), comprised of the Directors Guild of America (a national labor organization that consists of almost 10,000 members and represents almost all professional film, television and video directors and their staffs), the American Society of Cinematographers (a professional and cultural organization dedicated, for the past 75 years, to the advancement of motion image capture and manipulation), the International Photographers Guild, Local 600, IATSE, AFL-CIO (the largest cinematographers union in the world representing 5,500 cinematographers, camera operators, and assistants throughout the United States), and Panavision International L.P. (the world's largest manufacturer of motion picture and television cameras and related equipment), by its attorneys, hereby submits the following comments with respect to the Fifth Further Notice of Proposed Rule Making (the "Fifth Further Notice") in the above-captioned proceeding.

OVERVIEW

The Coalition represents the individuals whose creative talents and artistic vision is responsible for the preeminence of American films — an art form that inspires the imaginations of the viewing public, generates billions of dollars in

annual revenues and, in this regard, plays a central role in the U.S. economy. The men and women who make motion pictures are first and foremost artists, visual storytellers, crafting, shaping and capturing images. In order to appreciate fully the dramatic and emotional impact of these works, the public should be able to see these images as intended by the people who created them. The public is able to do so when they pay to see films in theaters, but, for the past 50 years, they have been shortchanged when they view films on television. The FCC now can rectify this situation.

It is for this reason that the Coalition is participating in this proceeding. In light of the fact that television relies heavily on the vast libraries of American made films — and that television is for many viewers (particularly economically disadvantaged ones) the only medium through which they will experience many films — the adoption of a digital television (“DTV”) standard will determine the manner in which the public views film makers’ works well into the next century.

While the Coalition is pleased that the Commission is aware of the concerns of the Hollywood artistic community and recognizes that any DTV standard should promote artistic creativity,¹ the Coalition is deeply concerned that two elements of the video transmission standard proposed by the Advisory Committee on Advanced Television Service (“ACATS”) — the aspect ratio and inclusion of interlace scanning techniques — would prevent the public from experiencing films the way the artists who created the films intended them to be seen. Despite the Commission’s perception of the ACATS standard, it is not open and flexible with respect to presently-available technologies and it does not have sufficient “headroom” to encompass future technologies.

¹ Fifth Further Notice at ¶ 51; Separate Statement of Chairman Hundt at 1.

Specifically, because the ACATS proposal limits broadcasters to transmitting in a 1.78:1 (16:9) or 1.33:1 (4:3) aspect ratio, wide screen (*i.e.*, 1.85:1 and greater) feature films — the format used in the production of all films over the past forty years² — would be unable to be viewed in their original formats, notwithstanding the fact that a substantial portion of the public may want to view films as they were intended to be seen and that this would undermine the film makers' artistic intent. The inclusion of interlace scanning techniques, moreover, also threatens substantially the public's ability to view films in their original form.

Failure by the Commission to adopt a DTV video transmission standard will not solve the problem. A standard must be adopted, because, without one, foreign manufacturers will create a *de facto* standard based on obsolete technologies, which are off-the-shelf or already in the production pipeline and which will be used to flood the U.S. market. The Coalition agrees with the Commission, moreover, that important public interest benefits will be advanced by the adoption of the right DTV standard.³

For these reasons, the Coalition supports adoption of a base line video transmission standard that builds on the substantial work of ACATS but, at the same time, safeguards the interests of the public. To foster certainty for consumers, manufacturers and broadcasters, all broadcasters would be required to transmit in accordance with this base line standard. From there, public demand and future technological innovations will dictate the inclusion by broadcast licensees of additional, enhanced transmission layers. The base line standard endorsed by the

² It is important to note that 40% of U.S. films produced in the past year were wider even than 1.85:1, including "Braveheart," which received the Oscar for Best Picture in 1995. The current blockbuster, "Independence Day," also was produced in an aspect ratio wider than the already wide screen 1.85:1 aspect ratio.

³ Fifth Further Notice at ¶¶ 32 and 35-37.

Coalition is as follows:

- 480 active video vertical lines per second, as proposed by ACATS;
- exclusive use of a progressive scanning format;
- a requirement that broadcasters transmit all films in their original aspect ratio; and
- picture refresh rates of 24, 36, or 72 Hz.

While the Coalition is not urging specification of receiver standards, if the Commission does adopt such requirements, the Coalition urges that the receiver standard include a 2:1 aspect ratio.⁴ This ratio would provide an appropriate frame for viewing wide screen films in many popular motion picture aspect ratios and, as such, would be an appropriate compromise between safeguarding the public's ability to experience films as they were intended to be seen and the need to keep consumer costs to a minimum.

The Coalition's proposed base line standard is a refinement, and not repudiation, of the ACATS proposal. While the proposed changes to the ACATS approach are relatively minor, the public interest benefits that will flow from such refinements are substantial: the public will be able to view films on television in the same manner they view them in the theater; the costs to consumers associated with migration to DTV will be reduced significantly, which, in turn, will accelerate the pace of that migration and the time period in which the analog broadcast

⁴ While the Coalition is aware that, at present, such a requirement may lead to slightly more expensive receivers and a modest reduction in resolution, those costs are more than offset by the savings to consumers from refusal to mandate ACATS' costly 18 formats approach and by enabling the public to experience films as the film makers intended and as they have seen them in theaters. Additionally, in light of the advancements in flat screen technology, the additional costs now associated with wide screen receiver production will be eliminated.

frequencies can be recovered; and, by eliminating interlaced scanning, interoperability between computers and television will be fostered, thereby facilitating the build-out of the National Information Infrastructure ("NII"), expanding opportunities for content providers, and fostering competition among hardware suppliers.

I. THE ACATS PROPOSED VIDEO TRANSMISSION STANDARD IS FLAWED.

The ACATS proposed video transmission standard is flawed in a number of significant respects.

A. The ACATS Aspect Ratios Are Inflexible and Undermine Public Choice and Artistic Creativity.

The ACATS standard would restrict broadcasters to only two aspect ratios, one of which, 1.33:1 (4:3), has not been used for decades for feature films, and the other of which, 1.78:1 (16:9), never has been used: 1.33:1 (4:3) was put in place roughly 50 years ago, and 1.78:1 (16:9) is based on technology developed by the Japanese broadcaster NHK in the early 1970s. By confining broadcasters to aspect ratios that are inconsistent with wide screen production techniques, the adoption of the ACATS proposal would prevent the public from viewing films in the manner film makers intended.⁵

As such, the ACATS approach undermines principles of both public choice and artistic integrity. Moreover, this shortchanging of both the public and artistic community would not be a short lived phenomenon, but would persist into a future that otherwise promises an abundance of programming creativity and

⁵ It is worth noting that the widest screen aspect ratio used by film makers is comparable to the stage set opening within the proscenium arch used by professional designers in theatrical productions. Like film makers, theatrical designers have determined that a roughly 2:1 ratio is the most appropriate aesthetic frame.

technological innovation. Notwithstanding ACATS's claims and the FCC's assumptions, the ACATS proposal is not open and flexible — even to encompass present technologies — and does not have sufficient “headroom” for future technologies.

Throughout the Fifth Further Notice the Commission characterizes the ACATS proposal as “dynamic” and “flexible.”⁶ Indeed, this flexibility is a major factor underlying the Commission's proposal to adopt the ACATS approach.⁷ There is no flexibility — present or future — in the ACATS standard with respect to the aspect ratio, however. Adoption of this so-called “flexible” approach forever would preclude broadcasters from displaying wide screen motion pictures meaningfully in their native aspect ratios — even if broadcasters desired it and the public demanded it.

Instead, broadcasters would be forced to cut wide screen film images down so that they can fit within the more narrow aspect ratios prescribed by the ACATS proposal, a process known as “panning and scanning.” Panning and scanning fundamentally alters the dramatic impact of wide-screen images by removing visual information and changing the composition of such images and, as such, deprives the public of the ability to experience films in a full and meaningful manner.⁸

Examples of wide screen films that have been “panned and scanned” are set forth in Attachment A, hereto. Attachment B, hereto, shows Leonardo DaVinci's

⁶ Fifth Further Notice at ¶¶ 8, 37-40, and 49.

⁷ Id. at ¶ 40; Statement of Commissioner Chong at 2.

⁸ Broadcasters, however, could display entire wide-screen film images by using a process known as “letterboxing” (*i.e.*, inserting black bands above and below the film image). Letterboxing does not involve the cropping of film images and, therefore, is preferable to panning and scanning. If broadcasters transmit wide screen films using letterboxing, the Commission should require that the unused portions of the screen either are left blank or used to display subtitles.

“Last Supper” after the pan and scan process. DaVinci’s painting, which, coincidentally, was done in an aspect ratio employed by many wide screen film makers, depicts the twelve disciples with Jesus. Yet, after the painting is panned and scanned to bring it within a 1.78:1 (16:9) aspect ratio, only nine disciples remain visible. The panning and scanning process also introduces into wide screen films camera movements that are not present when the film is viewed in its native aspect ratio. Thus, panning and scanning alters both the composition and dramatic content of films.

Accordingly, if broadcasters are required to transmit only in either a 1.33:1 (4:3) or 1.78:1 (16:9) aspect ratio, film makers either must produce images based on more narrow aspect ratios or acquiesce in the destruction of their work when displayed on DTV. While forty years of film making make plain that film makers will not return to narrower aspect ratios, producers of content intended solely for television distribution will be denied the freedom to make use of wide screen production techniques.

A government requirement that film images be forced into an artificial aspect ratio (chosen by broadcast engineers, not the artistic community), regardless of the desires of film makers and the tastes of the viewing public, is inconsistent with principles of viewer choice, the deregulatory spirit underlying the new Telecommunications Act, and one of the stated objectives of the Commission in this proceeding: to promote artistic creativity.

B. Interlace Scanning Degrades Film Images and Impedes Convergence of Media Technologies.

Under the ACATS proposal, broadcasters would be able to select from a range of transmission formats, including several that employ interlace scan formats. The

inclusion of interlace scanning techniques in four of the eighteen transmission formats constitutes another serious flaw in the ACATS proposal. Again, the ACATS proposal does not represent the state-of-the-art in digital technology.

Interlaced scanning was developed over fifty years ago and, as acknowledged by all interested parties — including ACATS and the Commission — is inferior to progressive scanning.⁹ Interlace scanning techniques create video “artifacts,” or imperfections, that detract from the clarity and resolution of film images. As the Commission previously has recognized, these imperfections include interline flicker, line crawl, vertical aliasing, large area picture flickering, static raster, and temporal aliasing.¹⁰

In contrast, progressive scanning eliminates video artifacts and, moreover, allows film makers to manipulate emotional content and perceptions of time by selecting appropriate frame rates during film production. In light of the fact that interlace scanning also appears to be unsuitable in the computing environment, use of that format by broadcasters will hamper the convergence of the television and computing industries.

Although the ACATS proposal includes progressive scan formats, given the broadcast industry’s historic reliance on interlace techniques and the wide availability of interlace-based equipment produced by foreign manufacturers, there is a serious risk that interlace could become the *de facto* transmission standard. While de-interlacing devices exist, such devices are expensive and would add needlessly to the costs to consumers associated with migrating to DTV.

⁹ See, e.g., ACATS, Advisory Committee Final Report and Recommendation (November 28, 1995) at 16; Advanced Television Systems and Their Impact on the Existing Broadcast Service, Notice of Inquiry, 2 FCC Rcd 5125 (1987) at ¶ 6.

¹⁰ Id. at ¶¶ 9-14.

In addition, fostering interoperability among media technologies is important to the Coalition. Computer/television convergence will allow viewers to access film libraries via the Internet and CD-ROM through intelligent DTV receivers. This will provide an additional distribution outlet for the film industry and enhance the public's access to the vast U.S. film archives. Convergence also will contribute significantly to the development of the NII. Finally, interoperability between computers and broadcast television will invite the vibrant U.S. computer and software industries to produce products for the DTV environment. This will provide an important competitive stimulus to the traditional makers of broadcast receivers which, in turn, will reduce consumer cost.

It is also worth noting that, because existing broadcast receiver manufacturers are ultimately foreign-owned (*e.g.*, Zenith, Lucky/Goldstar, and RCA/Thompson), the profits associated with the migration to DTV receivers based on the ACATS proposal will flow off-shore. In this regard, the Commission should adopt a standard that facilitates competition between existing foreign-owned television manufacturers and manufacturers of computer hardware, the majority of which are U.S. corporations.

C. Inclusion of Refresh Rates Based on The 3-2 Pulldown Technique Is Inappropriate.

Film is mastered and distributed at 24 frames per second. While the Coalition supports the 24 Hz picture refresh rate set forth in the ACATS proposal, because the ACATS proposal also includes refresh rates based on the 3-2 pulldown technique (*i.e.*, 30 and 60 Hz), there is no assurance that DTV broadcasters will transmit film at 24 Hz. The Coalition also supports the inclusion of higher refresh rates not based on the 3-2 pulldown technique (*i.e.*, 36 and 72 Hz) as such rates are required for film exhibition in a computer environment, such as via CD-ROM and the Internet.

D. The ACATS Proposal Is Unnecessarily Costly.

While the Fifth Further Notice describes the ACATS proposal as a standard, it is really a collection of eighteen different standards. As such, the ACATS proposal is unnecessarily complex and costly. If consumers, manufacturers and broadcasters are to receive the benefits of the certainty associated with adoption of a standard — or, as Commissioner Ness describes it, the knowledge that a television set bought in Louisville will work in Lincoln, Little Rock or Lubbock¹¹ — then, as a practical matter, DTV receivers will have to be capable of receiving all eighteen formats. Indeed, this is precisely the approach the ACATS Technical Subgroup urges the Commission to follow.¹²

In order to receive all eighteen formats, however, a television set will need to be highly complex which, in turn, will make the receiver prohibitively expensive. Consumers that would be satisfied receiving standard definition television (“SDTV”) will be forced to purchase sets that also are capable of receiving high definition television (“HDTV”), notwithstanding the fact that not a single broadcaster in their service area may be transmitting an HDTV signal.

Pricing large segments of the consumer market out of the DTV receiver market will widen the chasm between technology “haves” and “have nots” and, moreover, retard the overall migration to DTV. This, in turn, will delay recovery of the broadcasters’ analog spectrum.

¹¹ Separate Statement of Commissioner Ness at 3.

¹² Fifth Further Notice at ¶ 66.

II. A BETTER APPROACH EXISTS.

A. A Standard Should be Adopted by the Commission.

While the Coalition opposes adoption of the ACATS video transmission standard, the Coalition agrees with the Commission that the public interest can be advanced substantially by adoption of the right standard.¹³ In addition, the Coalition believes that failure to adopt a *de jure* standard likely will result in the establishment of a *de facto* DTV standard by foreign manufacturers prepared to capture the U.S. market with hardware based on obsolete technologies that is off-the-shelf or already in the production pipeline.

B. Adoption of the Coalition's Base Line Standard Would Maximize Public Interest Benefits.

Unlike the ACATS proposed video transmission standards, adoption of the base line standard supported by the Coalition will result in the realization of the benefits — and the avoidance of the costs — traditionally associated with government-specified standards. Specifically, requiring all broadcasters to transmit the base line standard will give rise to certainty for consumers, broadcasters and manufacturers, guarantee equipment compatibility, and promote effective competition. These benefits, in turn, will foster the transition to DTV receivers.

The base line standard, moreover, would avoid the excessive public interest costs associated with the ACATS approach. First, because manufacturers and broadcasters would be free to add enhanced, additional layers to the base line standard (constrained only by the pace of technological innovation and consumer demand), the base line approach in no way hampers technological innovation or locks in an obsolete transmission format.

¹³ *Id.* at ¶¶ 32 and 35-37.

Second, because DTV receivers would be required to be consistent only with one base line format instead of ACATS's eighteen standards, receivers will be substantially less expensive and consumers will be able to purchase only the level of technology and features they want. If receivers are less expensive and manufacturers can respond more directly to consumer preferences, consumers will be more able and willing to buy new DTV receivers, thereby hastening the migration to DTV and, in this regard, speeding recovery of the broadcasters' analog spectrum.

Third, by allowing manufacturers to offer receivers with enhanced DTV layers, the base line approach will encourage competition among manufacturers by permitting them to offer differentiated products using different technologies. This also will expand consumer choice.

Fourth, by requiring the transmission of films in their native aspect ratios, the base line standard will permit the public to experience films in the manner the creators of those films intended. Broadcasting films in their native aspect ratios also will foster creativity in the film and television media: Film makers, like painters, have their artistic vision constrained only by the size of the canvas on which they work. Wider screens lead to more varied and dramatic compositions.

Finally, the exclusion of interlace scanning techniques from the Coalition supported base line standard not only would permit the public to appreciate fully cinematographers' use of varying frame rates to manipulate emotional content and perceptions of time, it also would remove a major impediment to the convergence of the computer and television industries. This would ensure that the great promise of this proceeding goes substantially beyond just delivering pretty pictures

and better sound to people watching television.¹⁴

CONCLUSION

The Coalition is aware that supporters of the ACATS proposal have expressed frustration that the membership of the Coalition and others have entered this process belatedly. That frustration is misplaced: The views expressed in these comments were shared with the Commission and the developers of the ACATS proposal nearly three years ago.¹⁵ In any event, as the Fifth Further Notice makes plain, the adoption of DTV standards is too critical an issue to ignore the views of all interested parties.¹⁶

As discussed in detail above, the ACATS proposal, in its present form, is flawed. In light of the fact that failure to adopt a DTV standard will lead to the establishment of an inferior *de facto* standard and, moreover, that adoption of the base line video transmission standard endorsed by the Coalition would serve important public interest goals, the Commission should adopt the Coalition's base line approach.

¹⁴ The Coalition also notes that, because the base line standard precludes use of screen refresh rates based on the 3-2 pulldown technique, the base line standard further enhances the public's ability to view films as they were intended to be seen and, moreover, encourages interoperability of media.

¹⁵ In September 1993, Victor Kemper, President of the American Society of Cinematographers, appointed an ad hoc committee to study the then-current ATV proposals. After examining the proposals, the committee made three recommendations: (1) Base any ATV system on a progressive scanning architecture; (2) require all films to be transmitted in their original aspect ratio; and (3) require receivers to be based on a 2:1 aspect ratio. In December 1993, the ad hoc committee's recommendations were published in an editorial in the American Cinematographer Magazine and forwarded to the Commission and members of ACATS.

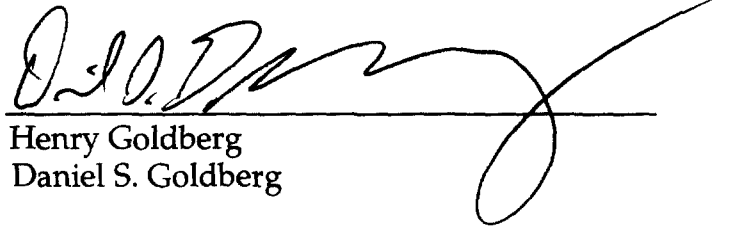
¹⁶ Fifth Further Notice at ¶¶ 23, 29.

The promise of DTV is great. The Coalition urges the Commission to see that such promise is fulfilled. Adoption of the base line standard will achieve that end.

Respectfully submitted,

DIRECTORS GUILD OF AMERICA
AMERICAN SOCIETY OF CINEMATOGRAPHERS
INTERNATIONAL PHOTOGRAPHERS GUILD
PANAVISION INTERNATIONAL L.P.

By:

A handwritten signature in black ink, appearing to read "D. S. Goldberg", is written over a horizontal line. The signature is fluid and cursive, with a large loop at the end.

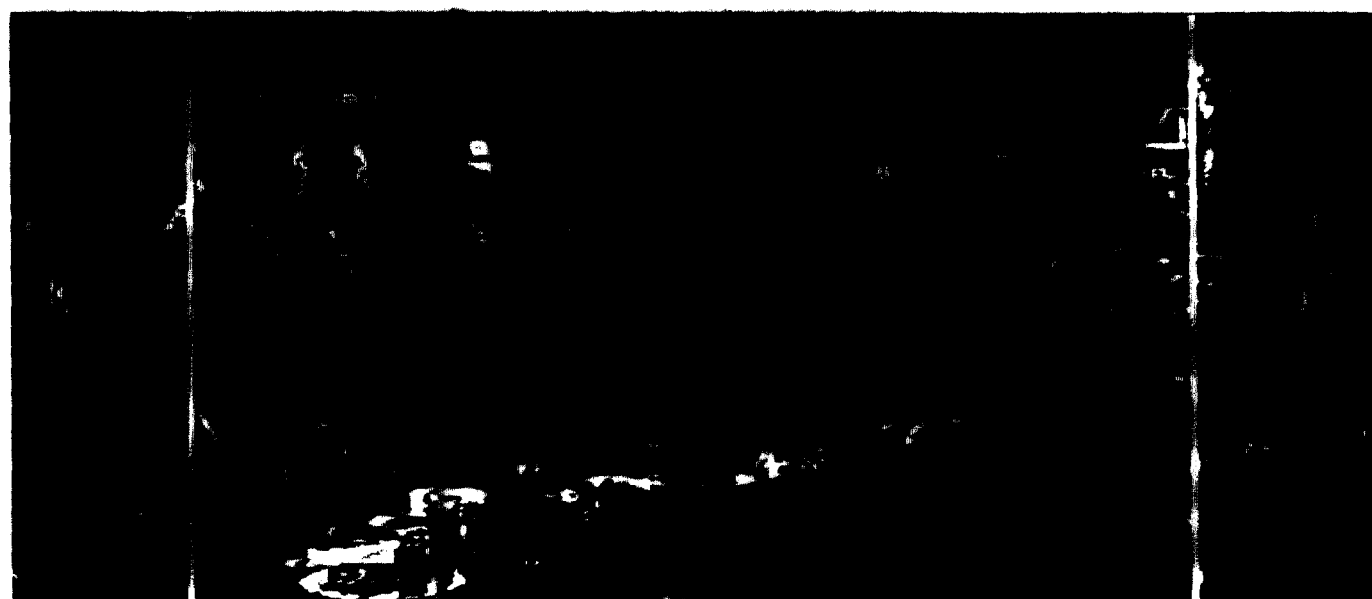
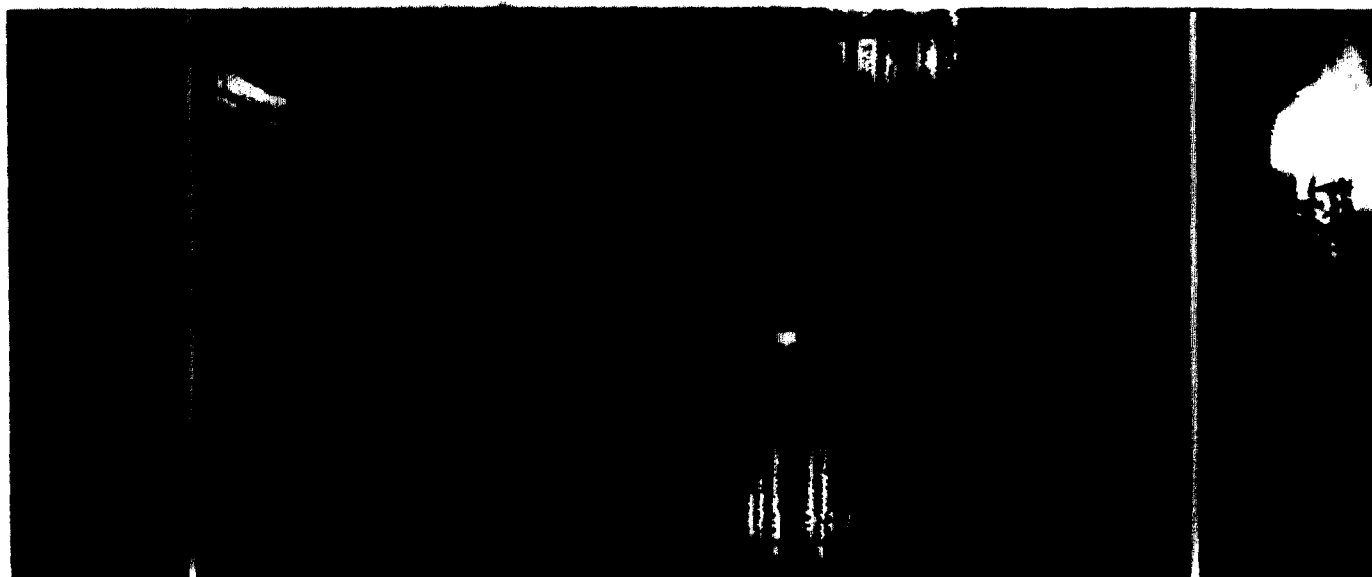
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ATTACHMENT A



Widescreen Images Cropped by 16x9

ATTACHMENT B

